

Overall Course Expectation	R	1	2	3	4
Demonstrate an understanding of the exponent rules and apply them to simplify expressions;					

1. Write as a **single power** with a simplified exponent. Do NOT evaluate.

a) $p^8 \times p^9$

b) $\frac{2m^{10}}{m^4}$

c) $(a^5)^4$

d) $7^4 \times 7 \div 7^3$

e) $\frac{(5^4)^5}{5^4 \times 5^6}$

g) $((-3)^2(-3)^6)^3$

h) $\frac{(n^7)^3}{(n^5)^4}$

f) $\left(\frac{2}{5}\right)^2 \left(\frac{2}{5}\right)^8 \div \left(\frac{2}{5}\right)^3$

2. **Simplify** the following.

a) $-4a^6b^3 \times 5ab^2$

b) $(3x^4y^3)^2$

c) $\frac{(4y)^2(y^5)}{2y^6}$

d) $\frac{3xy^2 \times 4x^3y^6}{(4xy^2)^2}$

e) $\frac{10a^5b \times 4a^2b^2}{5ab^2 \times 6ab}$

f) $\frac{(2g^2h^4)^3 \times 3g^2h^7}{(-2g^4h)^2}$

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Manipulate numerical and polynomial expressions, and solve first-degree equations					

3. **Expand**, where necessary, and **simplify** by collecting like terms:

a) $3x - 7 + 5x^2 - 8 - 4x$

b) $2x(x^2 - 9x)$

c) $5(2x + 1) - (x - 3)$

4. **Solve**:

a) $\frac{a}{5} = 7$

b) $4b + 1 = 13$

c) $-4(c - 4) = 6(3c - 1)$

d) $\frac{5d}{2} - \frac{d + 2}{3} = 3$

e) $\frac{1}{2}(2x - 5) = 4x - 3 - 12x - 4$

5. Geoff was given a tough equation to solve. He knew he needed to clear his fractions to simplify the equation, but he made some mistakes in his work. Correct Geoff's errors and **explain** what he did wrong.

$$\begin{aligned}\frac{5x-4}{3} &= 5 + \frac{7x}{2} \\ 3 \times \left(\frac{5x-4}{3} \right) &= 5 + 2 \times \left(\frac{7x}{2} \right) \\ 5x-4 &= 5 + 7x\end{aligned}$$

6. **Rearrange** each formula for the indicated variable.

a) $r = dx + k$, **isolate** x

b) $E = mc^2$, **isolate** c

7. Make an equation that uses several of the components (fractions, distributive property, collecting like terms) we learned in this unit that has a solution of $x = 2$. Show the work you used to create it and show a solution to verify $x = 2$.